March 4, 1958 C. J. HEYWOOD 2,825,281

APPARATUS FOR HANDLING SUCCESSIVE SHEET UNITS FOR A SUBSEQUENT IMPRESSION OPERATION THEREON

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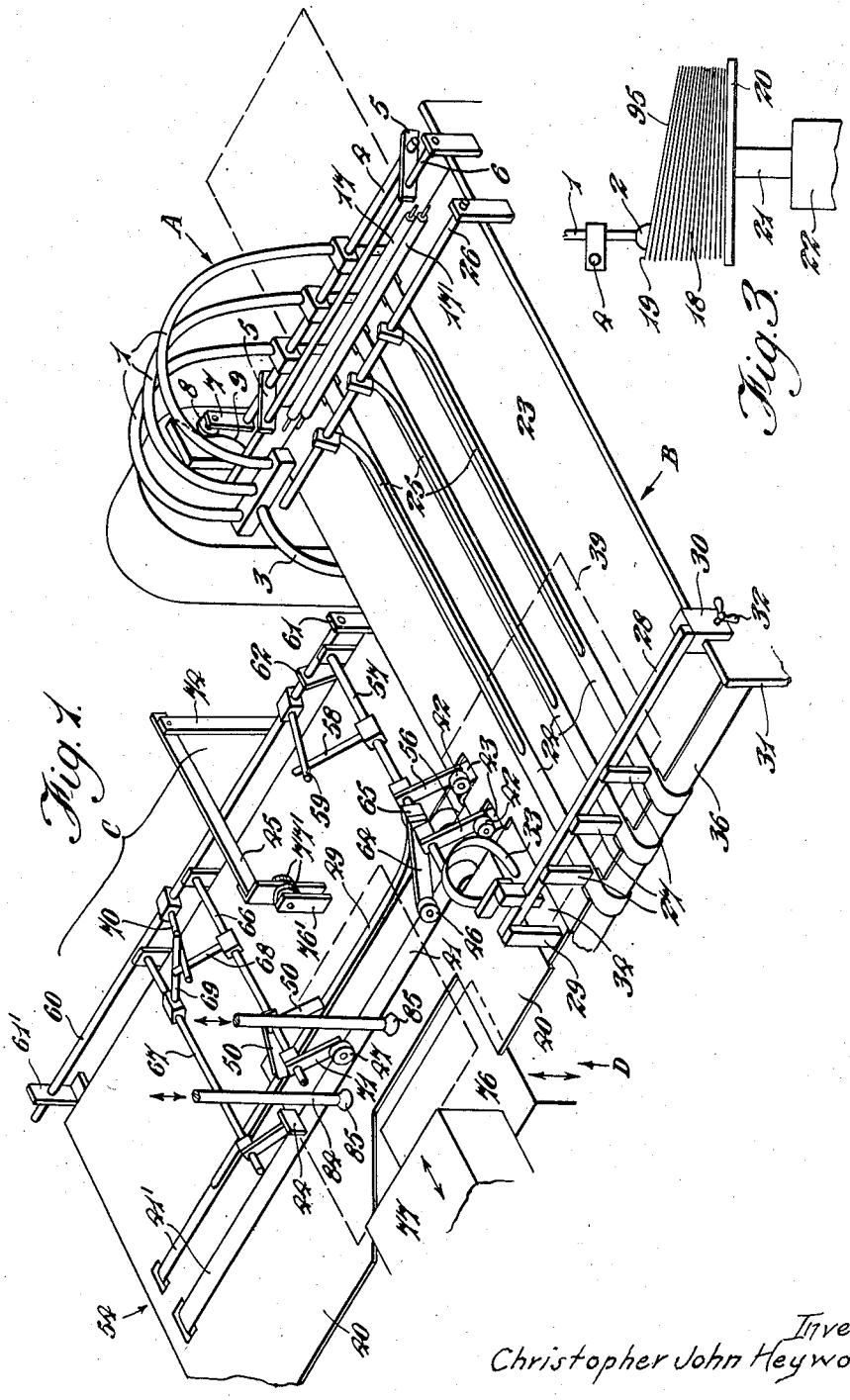

Fig. 1.

Fig. 3.

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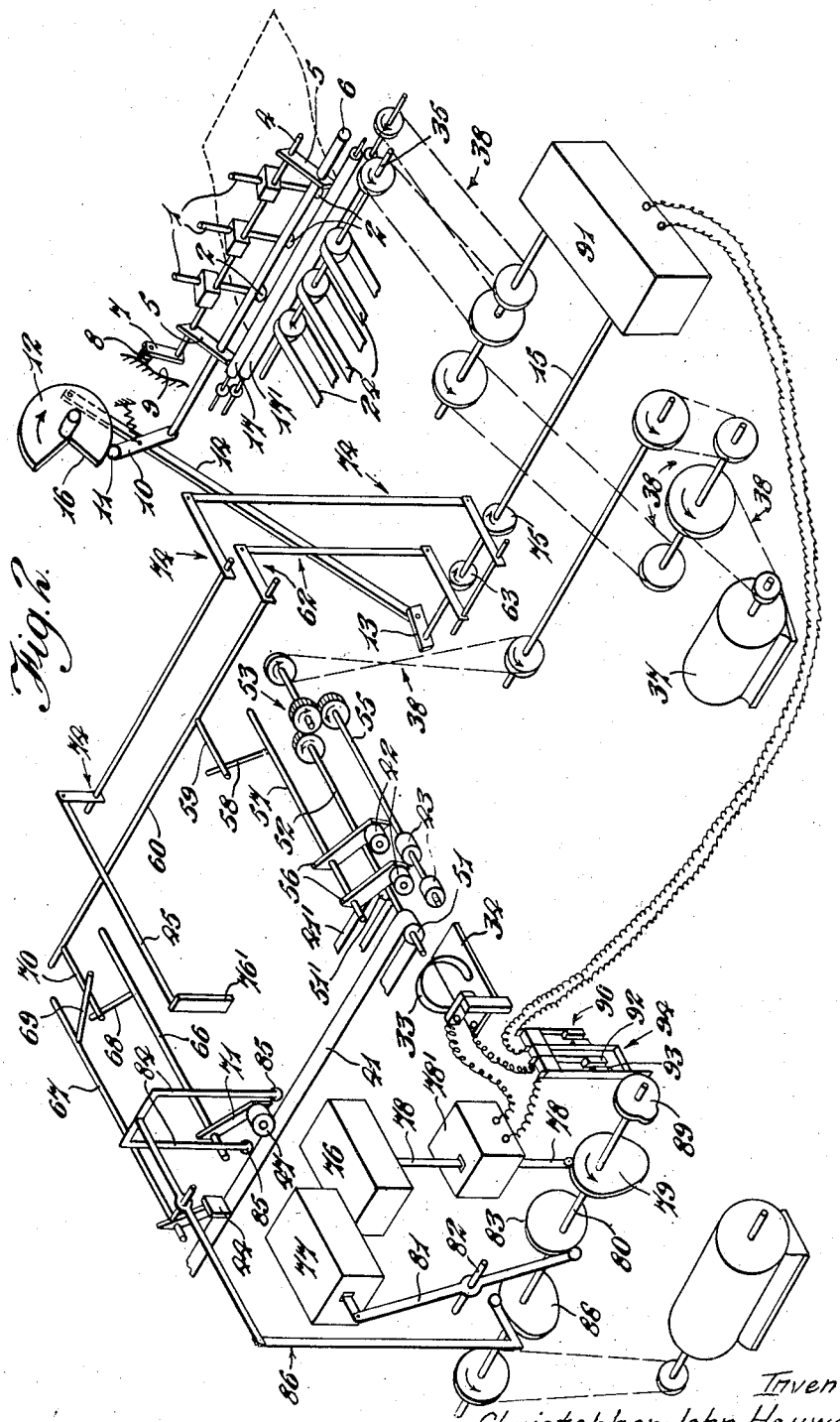
Fig. 2.



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APPARATUS FOR HANDLING SUCCESSIVE SHEET UNITS FOR A SUBSEQUENT IMPRESSION OPERATION THEREON

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6 Claims. (Cl. 101—287)

This invention is concerned with a method and apparatus for automatically feeding successive sheet units from a pile thereof to a machine adapted to stamp an impression thereon, the term "sheet unit" being employed herein to denote units of paper, cardboard or like material in the form of single sheets, cards, envelopes and the like, or a group of such sheets etc. fastened together to form a unit, and the term "stamping an impression" being used herein to connote an operation in which two relatively movable jaws are urged together to form a printed or embossed impression on a sheet unit positioned therebetween. Exemplary of the sheet units which may be handled according to the invention are units known as "multi-copy" sets, in which two or more sheets of paper are held together to form a unit by securing an edge of each sheet to the corresponding edge of an adjacent sheet by means of adhesive or other means.

The invention finds particular application to the automatic feeding of sheet units to a die stamping machine; particularly of the so-called "inverted" type, wherein the sheet units are to be subjected to an embossing operation along one edge portion thereof. The invention also finds application in analogous machines such as addressing machines.

It is a primary object of the present invention to provide a simple method and apparatus for automatically feeding successive sheet units from a pile thereof to an impression stamping machine of the character hitherto fed manually by an operator.

It is a second object of the invention to provide a method and apparatus of feeding successive sheet units from a pile thereof to an impression stamping machine, the pile being made up of superposed units which are raised along one edge, e. g. by reason of a previous embossing operation in multi-colour die stamping, so that all individual units in the pile do not lie in a horizontal plane thus complicating the operation of automatically and successively picking up the uppermost sheet unit of the pile and conveying it to the impression stamping machine.

It is yet a third object of the invention to provide a method and apparatus of feeding successive sheet units from a pile to an impression stamping machine, whereby the sheet unit receiving an impression is positively stripped from the jaws of the stamping machine.

It is a fourth object of the invention to provide an improved combination of a die stamping or like machine and feeding apparatus adapted to feed sheet units to such machine quite automatically from the top of a pile of such units.

It is a fifth object of the invention to provide a feeding apparatus which is adapted to feed, to an impression stamping machine, sheet units from the top of a pile thereof, such feeding apparatus being arranged to feed the sheet units to the stamping machine in a number of alternative directions involving at some stage in the sequence of feeding sheet units to and removing such units from the stamping machine a change of direction of the sheet units; such change in direction leading to flexibility of operation and the ability to employ simple means, such as suction feeders, of picking up the uppermost sheet units from an inclined pile thereof.

Other objects of the invention will appear from the description which follows and the claims appended to this specification.

A practical embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 shows a general diagrammatic perspective view of a sheet feeding apparatus adapted to work in conjunction with a conventional manually fed "inverted" type die stamping machine, in such view only those parts necessary to an understanding of the invention being shown;

Figure 2 shows a diagrammatic perspective view of certain of the moving parts of the apparatus of Figure 1 and also shows the mode of operation of such parts in relation to the operation of the die stamping machine, and

Figure 3 shows a pile of superposed sheets for feeding to the apparatus depicted in Figure 1.

Referring now particularly to Figure 1, the apparatus therein shown consists of a sheet pick-up section A, a first belt conveyor section B, a second belt conveyor system C and a die stamping section D of which only the essential parts are shown, namely the male die and the force. In order to give a general picture of the functioning of the various sections of the apparatus just referred to, it may be mentioned that the pick-up section A at timed intervals picks up the uppermost sheet of a pile thereof and feeds to the belt conveyor section B at the end of which the sheet is momentarily arrested and thereafter transferred with a change of direction to the belt conveyor section C. After the sheet has been transferred to belt conveyor system C it is conveyed thereby towards the die stamping section D and on arrival at this section is halted to permit of a die stamping operation along one edge thereof and is then moved on by the belt conveyor to some convenient region of collection.

Having indicated in very general terms the various sections of the apparatus shown in the drawings and also their function, the apparatus and its mode of operation will now be described in greater detail.

The sheet pick-up section A consists of three flexible feeders 1 terminating in suction heads 2 and communicating with a common suction pipe 3. The suction feeders 1 are mounted fast on a rod 4 supported by arms 5 said arms being rigidly secured to a rockable shaft 6, the rod 4 being free to rotate about its own axis. At one end of rod 4 is rigidly connected an upstanding arm 7 bearing at its end a cam follower 8 working in a cam track 9. As will be evident from Figure 1 rocking of shaft 6 causes rod 4 to move in an arc thereabout, a rotational movement of rod 4 about its own axis being in addition imparted by the action of the cam track 9 on the follower 8. The means for rocking shaft 6 is shown in Figure 2 from which it will be seen that one end of shaft 6 is provided with a fixed arm 10 bearing a cam follower 11 at its end, such follower coacting with a cam 12 rotated by a crank 13 and connecting rod 14, the crank 13 being mounted on a cam shaft 15 which is intermittently rotated through one revolution.

In the operation of the sheet pick-up section A, the suction feeders 1 move between the position shown in Figure 1 where the suction heads 2 are turned downwardly and rest upon the uppermost sheet (indicated in dotted lines) of a pile thereof and the positions shown in Figure 2 in which the suction heads 2 have been swung upwardly and turned inwardly towards the conveyor belt

section B. The upward and corresponding downward movement of the suction heads 2 is effected by the clockwise rotation of the cam 12, while the inward and corresponding outward movement is effected by the action of cam track 9 on follower 8 which causes rotation about its own axis of rod 4 while the suction heads are being moved upwardly or downwardly by cam 12. Thus, considering first the upward and downward movement of the suction heads 2, it will be seen from Figure 2 that, on clockwise rotation of cam 12, the follower 11 is released by the cut away segment of the cam whereupon arm 10 moves rapidly clockwise thereby rotating shaft 6 and moving rod 4 and the suction feeders thereon in a downward arc towards a pile of sheets therebelow, this downward movement being reversed when the follower 11 makes contact with the surface 16 of the cam 12 at which point the follower is gradually moved back in a counterclockwise direction to the position shown in Fig. 2. The inward and outward movement of the suction heads 2 accompanies the upward and downward movement just described, it being seen from Fig. 1 that when the suction heads are in their lowermost position and are about to pick up the uppermost sheet, the cam follower 8 is in the depression of the cam track 9 and the rod 4 is at its limit of permissible counterclockwise rotation. On the other hand when the suction heads 2 are raised by cam 12, cam follower 8 rides up the cam track 9 causing clockwise rotation of rod 4 and a corresponding inward movement of the suction heads.

While no specific reference has been made in the preceding description to the supply of suction to pipe 3, it will be appreciated that such suction is applied in timed relationship to the movement of the suction heads 2. Thus suction is automatically applied when the suction heads are approaching the uppermost sheet to be picked up thereby, suction being maintained after the sheet has been picked up and the suction heads 2 raised and turned inwardly to present the leading edge of the sheet shown in dotted lines in Figure 2 to the nip between a pair of driven transfer rollers 17, 17' which constitute the input to the conveyor belt section B. After presentation of the leading edge of the sheet to the transfer rollers 17, 17' and on engagement thereof between the rollers, the suction is automatically cut off to permit the sheet to pass through the rollers. The application of suction to and its removal from pipe 3 at the correct moment in the cycle of movement of the suction heads 2 may be readily accomplished by a simple air valve actuated by a cam on cam shaft 15, such parts being omitted from the drawings in the interest of simplicity.

The sheet pick-up section A operates to pick up sheets from a pile thereof supported on a vertically movable platform, such pile and platform being shown in Figure 3 in which numeral 18 indicates a pile of sheets already embossed along one edge portion 19 so that the individual sheets in the pile are inclined to the horizontal and in which numeral 20 indicates a platform mounted on a pillar 21 which is adjustable vertically by a lifting mechanism 22 of conventional type. The level of the uppermost sheet of the pile 18 may be maintained automatically constant within such limits as do not affect the efficient lifting of the uppermost sheet by the suction heads 2 by any conventional mechanism, although it is preferred to achieve this by the provision of an arm (not shown) pivoted to a fixed member with its free end resting upon the uppermost sheet, which arm operates a switch when its free end has descended a predetermined and adjustable distance. Operation of the switch then closes an electric circuit whereby ratchet means (not shown) in lifting mechanism 22 are set in motion to raise the platform to bring the uppermost sheet thereon on the required level, thus raising the free end of the arm and opening the switch when the desired level has been reached.

The belt conveyor section B comprises essentially the transfer rollers 17, 17' already referred to, a fixed table 23 and three endless driven conveyor belts 24 which run over the surface of the table 23. In addition there are provided three flexible polished metal strips 25 attached at one end to a transversely extending rod 26, the free ends of such strips overlying the belts 24. At the end of the fixed table 23 remote from the transfer rollers 17, 17' are arranged adjustable stops 27 mounted on a transverse bar 28 supported at one end by a movable leg 29 slidable over the surface of the table 23 and supported at the other end by a bracket 30 slidable along an upstanding flange 31 fixed to table 23, bracket 30 being clampable in any desired position on flange 31 by means of wing nut 32. Transverse bar 28 also carries a curved flexible electrically conducting metal strip 33 whose free end is permitted to make contact with an electrically conducting surface 34 on the table 23. The strip 33 and surface 34 together constitute a safety device whose function will be described in more detail later. The endless belts 24 are supported at one end by a shaft 35 carrying pulleys (Figure 2) and at the other end by an idling roller 36 (Figure 1). Shaft and pulleys 35 and transfer rollers 17, 17', as will be evident from Figure 2, are driven from an electric motor 37 through a chain driven system indicated generally by reference numeral 38, so that belts 24 are continuously driven when the machine is in use.

In the operation of the belt conveyor system B, the transfer rollers 17, 17' receive the leading edge of a sheet each time the suction heads 2 are raised and moved inwardly, and the sheet thus engaged in the nip between the transfer rollers is passed through the rollers onto the moving conveyor belts 24 by which it is conveyed under the strips 25 to the end of the table where it is arrested by stops 27. A sheet thus arrested is shown in dotted lines in Figure 1 and is indicated by reference numeral 39. The function of the polished strips 25 overlying the conveyor belts 24 is to press a sheet conveyed by the belts into contact with the latter so as to avoid slippage. A sheet arrested by stops 27 is thereafter passed to belt conveyor section C which will now be described.

Belt conveyor section C comprises a fixed table 40 level with but readily detachable from adjacent fixed table 23, a pair of endless conveyor belts 41, 41' which run over the surface of the table, and means for transferring a sheet from belt conveyor section B, such means consisting in a pair of rockable rollers 42 mounted on table 40 and a pair of cooperating driven rollers 43 mounted on table 23. To facilitate bringing together these rollers to grip the side or lateral edge of a sheet unit which has been brought to rest at the end of its travel on the table 23, by the stops 27, the table 23 has the openings or recesses 43*a* therein through which the rollers meet. In addition belt conveyor section C includes a rockable stop 44, a transversely movable lay bar 45 and means for pressing a sheet conveyed by the belts 41, 41' into contact therewith comprising pivotally mounted rollers 46 and 47, a flexible polished metal strip 49 with weights 50 resting thereon. Conveyor belts 41, 41' are supported at one end by rollers 51, 51' (Figure 2) which are mounted on a shaft 52 which is driven from motor 37 through chain drive system 38 and a gear system 53. Belts 41, 41' are supported at their other ends on an idling roller (not shown) which is situated at the delivery end of the conveyor belt system C indicated by numeral 54. Driven rollers 43 which effect the transfer of a sheet from conveyor belt section B are mounted on a shaft 55 which is rotated by gear system 53 from the motor 37. The driven rollers 43 act in conjunction with the upper rockable rollers 42 which are mounted on arms 56 rigidly secured to transverse rockable rod 57, such rod 57 being provided with projecting finger 58 secured thereto. Coacting with finger 58 is another finger 59 at right angles thereto which is secured to a further rockable rod 60 supported in brackets 61, 61' mounted on table 40, such rod

60 having a rocking motion imparted thereto by a link mechanism 62 and a cam 63 on cam shaft 15. It will thus be seen that rotation of cam shaft 15 through one revolution causes the rockable rollers 42 to move downwardly towards the lower rollers 43 and then to be raised upwardly again. Transverse rockable rod 57 also carries roller 46, which is freely pivotably connected to the rod by means of an arm 64, and the polished metal strip 49 which is connected at its end to a block 65 which is free to rotate about the rod; thus the rocking motion imparted to rod 57 causes no movement of either the roller 46 or the strip 49. Rockable rod 60 of belt conveyor section C apart from operating transverse rockable rod 57 as described above also operates in a precisely analogous manner two further transverse rockable rods 66, 67, which have, respectively, extending fingers 68, 69 engageable with a finger 70 on rod 60. Transverse rod 66 carries at its free end an arm 71 secured thereto and provided at its end with roller 47 which may be brought to press down upon belt 41 when rod 66 is rocked; also carried by rod 66 are weights 50 which are pivotally mounted thereon, such weights exerting pressure on strip 49 overlying belt 41'. Transverse rod 67 carries at its free end stop 44 which is rigidly secured thereto so that rocking of the rod 67 raises and lowers the stop out of and into the path of a sheet carried by belts 41, 41'. Rod 67 may, and preferably will be adjustably mounted on table 40 so that the stop 44 carried thereby may be adjusted in any desired position along the length of the table. The transversely movable lay bar 45 previously referred to is connected at one end to a link mechanism 74 which imparts the requisite movement to the bar 45 by means of a cam 75 on cam shaft 15, one revolution of which reciprocates the lay bar. At its free end the lay bar 45 carries a pusher plate 76' whose lower end is adjacent the top surfaces of the table 40. As shown in Figure 1, the pusher plate 76' may be made adjustable along the length of the lay bar 45 by means of adjusting screws 77'.

In the operation of belt conveyor section C, a stationary sheet at the end of belt conveyor section B as shown in Figure 1 is rapidly transferred to belts 41, 41' by the downward movement of rockable rollers 42 which press the edge portion of the sheet against driven rollers 43 which thereupon grip the sheet and convey it onto belts 41, 41'. This transfer of a sheet from belt conveyor section B to section C occurs once every revolution of the cam shaft 15 and hence occurs each time a sheet is picked up and fed into conveyor section B. After transfer to belts 41, 41', the sheet which is held in contact with the belts by strip 49 and roller 46, is moved along until its travel is arrested by movement downwardly of stop 44 at which point the sheet is in the correct position along the length of table 40 for a die stamping operation, roller 47 being in the raised position. Directly following the downward movement of stop 44 the lay bar 45 is reciprocated to push the side edge of the sheet a small distance inwardly so as to positively locate the sheet in the correct lateral position. On the positioning of the sheet by stop 44 and lay bar 45, the die stamping operation is performed as will be more fully described later and on the completion of such operation stop 44 is raised and roller 47 lowered to press the sheet against the belts 41, 41' so that it is urged forward again to the delivery end 54 of conveyor section C.

It now remains to describe in brief terms the die stamping section D and its relation to the other moving parts of the apparatus already described. Only those parts of the die stamping section which are germane to the invention are shown in the drawings and these parts consist essentially of a lower block or force 76 which is reciprocable in a vertical direction against a die 77 which gives the impression and which is movable backwards away from the force 76 for inking purposes. The means for moving the die 77 and force 76 are shown diagrammatically in Figure 2, from which it will be seen that the force 76 is reciprocated vertically by a rod 78 working in conjunction with a mechanism 78' later referred to, rod 78 being operated by a cam 79 on a cam shaft 80, while the die 77 is moved substantially horizontally towards and away from the force by means of a cam following lever system 81 pivoted about 82 and operated by a cam 83 on cam shaft 80, a slight downward movement being imparted to the die 77 when it is brought into position above the force and a corresponding upward movement when it is being withdrawn from a position above the force. This slight vertical movement of the die 77 is to permit of a sheet to be inserted and withdrawn from between the die and the force which meet at the level of table 40. Mounted in front of the die 77 and force 76 are two vertically reciprocable rods 84 which carry pads 85 on their lower ends for the purpose of clamping a sheet to the fixed table 40 of the belt conveyor system C, a movement of the rods being effected by a cam following lever system 86 pivoted about 87 and operated by a cam 88 on cam shaft 80. Cam shaft 80 carries a further cam 89 which operates, once every revolution of cam shaft 80, to close the contacts of a switch 90, such contacts being operatively connected to a clutch driving mechanism 91 connecting cam shaft 15 with the chain driven system 38 of the sheet feeding portion of the apparatus. This clutch driving mechanism 91, which may be of any known construction, is adapted on closure of the contacts of switch 90 to cause cam shaft 15 to make one revolution. Thus each die stamping operation performed on a sheet by the die 77 and force 76 (which corresponds to one revolution of cam shaft 80) causes one revolution of cam shaft 15 of the sheet feeding portion of the apparatus and thereby effects the synchronised pick-up and conveying of sheets from a pile thereof to the die stamping section D.

Considering now the operation of the die stamping section D in relation to the belt conveyor section C, the various moving parts of the apparatus are so synchronised that as the force 76 is moving up against the die 77 a sheet is in position on fixed table 40 with the edge bordering portion thereof to be embossed overlying the force 76, the sheet being accurately placed and maintained in this position by movement of the stop 44 and lay bar 45 notwithstanding that belts 41, 41' are continuously in motion. The table 40 has therein the side recess or opening 40*a* through which the stamping members 76 and 77 or the force 76 and die 77 meet in the stamping or embossing operation. It will also be seen from the dotted outline of the sheet unit on table 40 that when the sheet unit is shifted laterally on the latter table and brought to rest against the stop 44, the edge bordering portion which is to receive the embossment will overlie this opening 40*a* and be disposed in a plane passing between the members 76 and 77. Just prior to the movement upwardly of the force 76 against the die 77, the sheet being interposed therebetween, rods 84 are moved downwardly so that the pads 85 thereon press and hold the sheet against the fixed table 40. Thereafter the die 77 and force 76 are pressed together to emboss the sheet and the force 76 is moved downwardly, the pads 85 still holding the sheet against the fixed table 40 whereby it is positively stripped from the moving parts of the die stamping section D. After such stripping action, the pads 85 are caused to rise with the rods 84, the stop 44 is raised and the roller 47 is lowered to press the sheet into contact with the belt 41 whereby the sheet is urged rapidly forward towards the delivery end 54 of belt conveyor section C where it is collected in any conventional manner.

While the functioning, as a whole, of the apparatus depicted in the drawings should be readily apparent from the foregoing description, for the sake of clarity the complete sequence of operations performed by the apparatus

will now be shortly described. Firstly, in timed relationship with the operation of die stamping section D, the suction heads 2 pick up the uppermost sheet from a pile thereof as shown in Figure 3 and present the leading edge of such sheet to the transfer rollers 17, 17' which convey the sheet onto the endless continuously rotating belts 24 between the belts and the overlying strips 25. Belts 24 quickly convey the sheet to the end of fixed table 23 whereat the sheet is arrested by stops 27, the position of such stops being adjusted to suit the size of sheet being handled so that the latter may be correctly positioned with respect to belt conveyor section C and the die stamping section D. After the sheet has been arrested by stops 27, the elevated rockable rollers 42 will descend to press the sheet against continuously driven lower rollers 43 whereby the sheet is urged at right angles on to belts 41, 41' of belt conveyor section C. On arrival in a position overlying the force 76, which at this point is below the level of table 40, stop 44 descends into the path of travel of the sheet to arrest its movement, lay bar 45 is urged inwardly against the edge of the sheet to urge momentarily the latter in towards the force 76, the lay bar being then withdrawn. When the sheet is correctly positioned in relation to the force 76 and die 77 and rods 84 descend and the pads 85 thereon positively clamp the sheet to the table 40, whereafter the force and die come together to die stamp the sheet along the adjacent edge bordering portion thereof. After the die stamping operation and the movement apart of force 76 and die 77, pads 85 are raised (having by this time stripped the sheet from the die and force), the stop 44 is raised and roller 47 lowered to press the sheet against the moving belt 41 so that the sheet is conveyed towards the delivery end 54 of table 40. The timing of the apparatus is so arranged that when a sheet is being subjected to a die stamping operation, a subsequent sheet is in a stationary position at the end of table 23 of belt conveyor section B waiting to be transferred to belt conveyor section C in the manner described, such timing being controlled in accordance with the movement of the force 76 and die 77 by means of cam shaft 80, switch 90, clutch driving mechanism 91 and cam shaft 15.

In order to guard against the possibility of the die 77 and force 76 coming together with no sheet therebetween whereby the force would be fouled with ink from the die, a safety device is provided on fixed table 23 of belt conveyor section B. As referred to briefly before, this safety device consists of a curved electrically conducting strip 33 which, in the absence of a sheet arrested at the end of table 23, makes contact with electrically conducting surface 34. As shown in Figure 2, strip 33 and surface 34 form part of an electrical circuit with the contacts 92, 93 of a switch 94, such circuit when closed serving to operate the mechanism 78' associated with rod 78 which drives the force 76. The mechanism 78' shown diagrammatically in Fig. 2 acts to limit the upward movement of the force 76, a similar mechanism being provided in practically all conventional die stamping and printing machines to take the impression off the dies at the will of the operator. Usually such mechanism is treadle operated. The switch 94 is operated simultaneously with switch 90 by the rise on cam 87 on shaft 80. Thus when switch 90 is closed to actuate clutch mechanism 91 thereby starting in motion the sheet feeding portion of the apparatus, switch 94 is also closed and if this time there is no paper between strip 33 and surface 34 the electrical circuit associated therewith will be closed thereby actuating mechanism 78' which takes the impression off the dies, i. e. prevents the die 77 and force 76 from coming completely together.

From the foregoing description, it will be evident that the invention provides a very simple method and apparatus for automatically feeding successive sheet units from the top of a pile thereof. In particular it should be noted that the change of direction imparted to each sheet, permits of the picking up of sheets along a horizontal edge portion although the individual sheets in the pile are inclined to the horizontal. Thus, if a sheet from a pile thereof previously embossed along one edge portion were fed straight in sideways to a die stamping machine for a second embossing operation along the same edge it would be necessary to pick up each sheet along an adjacent side edge portion which owing to the previous embossing operation would be inclined to the horizontal (as shown in Figure 3, the edge portion in question being identified by numeral 95) and would therefore complicate the means for sheet pick up since the inclination of each sheet to the horizontal would progressively vary as the pile decreased in height. The change of direction provided by the invention, however, permits the sheet to be picked up, by a very simple mechanism, along an embossed edge portion (or a diametrically opposite edge portion) and presented to a die stamping machine correctly orientated for a second embossing operation along the same edge portion. Instead of changing the direction of each sheet fed to the die stamping machine through a right angle as is the case with the embodiment described, such change of direction can be imparted in other ways, e. g. after the die stamping operation. Thus in the embodiment described, belt conveyor section B may be arranged to feed into the front of die stamping section D and belt conveyor section C may then be arranged to remove the sheets from the die stamper either from the left or right thereof. Alternatively, belt conveyor section B may be arranged to feed into the side of the die stamping section D and the belt conveyor section arranged to remove sheets from the die stamper from the front. However, the arrangement illustrated is preferred because it permits of easy access to the die stamper by removal of belt conveyor section C, this being readily achieved in the embodiment illustrated because it is merely necessary to disengage the gear on shaft 52 from the gear system 53 and to lift off the link systems 62 and 74 from the cams 63 and 75 on cam shaft 15. In fact in a practical embodiment of the apparatus illustrated, belt conveyor section C may be removed from belt conveyor section B by simply loosening one wing nut.

It will be clear that various modifications may be made to the apparatus heretofore described. Thus conveyor means other than belts can be employed, e. g. movable suction feeders arranged to transport successive sheets from one predetermined position to another.

I claim:

1. In the art of die stamping wherein relatively movable stamping members function to stamp or emboss sheet units, apparatus for moving sheet units to and orienting the same to proper position relative to said members comprising a pair of adjoining coplanar table surfaces, said stamping members being positioned for operation adjacent to one side of one table surface, means extending across the other table surface forming a stop, a first sheet unit conveying means for advancing a sheet unit from a source along said other table surface into edge engagement with said stop, a second sheet unit conveying means, said second means being carried by said one table surface for moving a unit away from the other surface in a plane passing between the stamping members, relatively movable sheet unit gripping and driving elements located between the first and second conveying means for gripping an edge of a sheet unit in edge abutment with the stop and moving it into operative connection with the second conveying means, and means for checking movement of a sheet unit along the second table surface at a location in which a portion of the unit bordering said edge is disposed between the stamping members for receiving embossment by said members.

2. In the art of die stamping, stamping means embodying relatively movable stamping members, means for actuating the members, a first table, a second table lying

adjacent to and in the plane of the first, means associated with the first table for moving therealong a sheet unit to be embossed along a portion bordering the advancing edge of the sheet unit, a stop means disposed across the first table in position to be engaged by said advancing edge of the sheet unit to stop the unit with the said edge and bordering portion in a predetermined aligned relation to the stamping members, means at the adjoining sides of the tables for gripping a lateral edge of a sheet unit when the unit is engaging the stop means and starting movement of the unit onto the second table toward the stamping means, means for taking the sheet unit from the gripping means and moving it along the second table in a plane passing between the stamping members, means for stopping movement of the sheet unit on the second table with said edge bordering portion between the stamping members, and means for engaging the edge of the sheet unit remote from the stamping means and moving it to final position between the stamping members in position to be stamped.

3. The invention according to claim 2, with mechanism operating to bring the stamping members together when the sheet unit is in said final position, and mechanism operating in timed sequence with the first mechanism for stopping the said movement of the sheet on the second table and for clamping the sheet on the second table and holding the sheet unit until the clamping members have separated.

4. The invention according to claim 2, with mechanism operating to bring the stamping members together when the sheet unit is in final position therebetween, electrical means for controlling the stamping movement of the stamping members and which when energized prevents the members from coming together, and means controlling energization of said electrical means comprising a contact plate in the plane of the tables in position to have a portion of the sheet unit lie thereover when stopped by the first stop and a yieldable contact for engaging said plate and between which and the plate the sheet unit moves to prevent energization of the electrical means.

5. The invention according to claim 2, wherein the second table has an opening through which the die members meet during a stamping operation and over which opening the said edge bordering portion of the sheet unit lies in said final position of the unit.

6. The invention according to claim 2, wherein the first stop is aligned across the path of movement of the sheet unit on the first table with the stamping means, and means for adjusting the position of the first stop in the direction of the path of movement of the sheet unit on the first table.

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